Polarized D^- Operation and Development of the IUCF Ion Source CIPIOS

V.P.Derenchuk[1], A.S. Belov[2]
[1]Indiana University Cyclotron Facility, Bloomington, Indiana
[2]Institute for Nuclear Research of the Russian Academy of Sciences, Troitsk, Russia

The Cooler Injector Polarized IOn Source (CIPIOS)[1] has most recently been used to provide polarized and unpolarized beams of negative deuterium ions for filling the injector synchrotron. More than 1.8 mA of up to 90% polarized D^- was available for injection into the RFQ pre-accelerator and several milliamperes of unpolarized beam was available. The addition of an electron blocker in a charge exchange ionizer with a two-stage converter[2] improved the source operation by reducing the total electron current extracted for the maximum 300A arc discharge current available. A doubling of this discharge current is now possible and should result in a corresponding increase in polarized current.[3]

1. V.P.Derenchuk, et al, "A Multi-Milliampere Polarized and Unpolarized Negative Ion Source for IUCF", 2001 Particle Acc. Conf., IEEE01CH37268, 2093(2001).
2. A.S. Belov, et al, Proc. of Polarized Sources and Targets 2001, eds. Vladimir P. Derenchuk and Barbara von Przewoski, World Scientific, (2002)205.
3. A.S. Belov, et al, Nucl. Instr. Methods A333, (1993)256.